

FIG. 1

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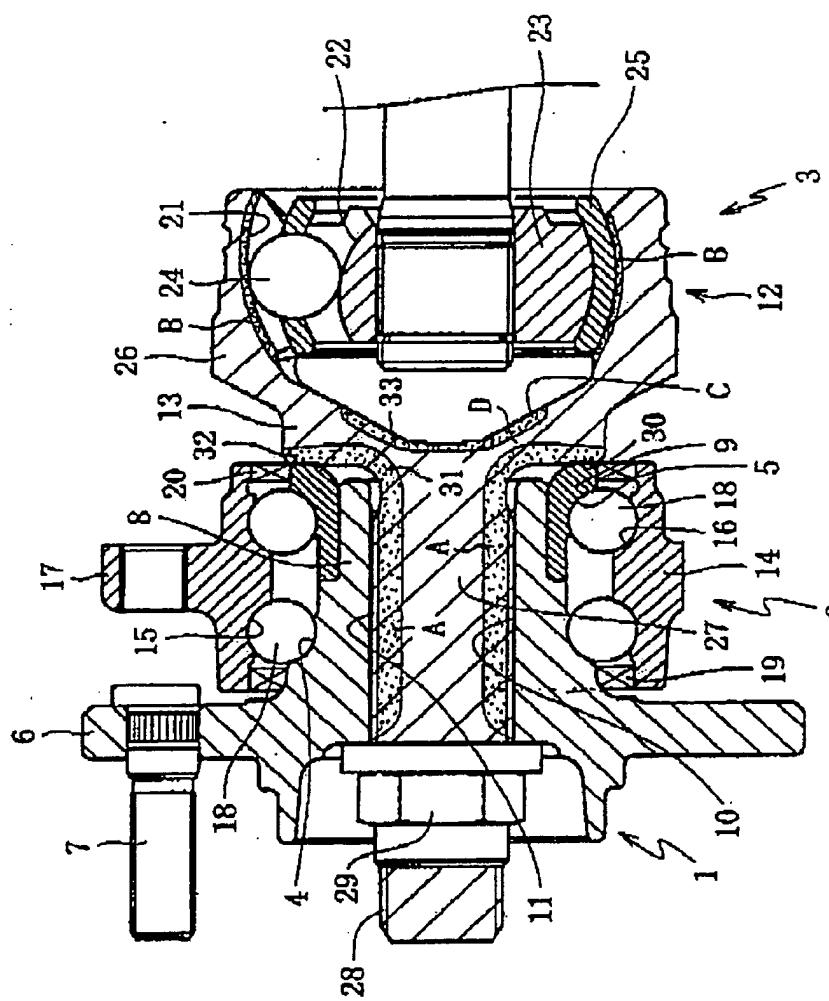


FIG. 2

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	Static torsion strength	Surface hardness (Hv) / Hardness effective depth (mm)	Mouth bottom portion
Conventional product	Reference	Base portion Unhardened portion	-
Example a	O	672/1.8 670/1.8	230 230
Example b	◎	670/1.8	703/0.8
Example c	◎	670/1.9	703/1.3
Example d	O	668/1.8	703/2.6
Example e	X	595/1.0	703/3.9 701/4.5

Cross:Crack occurred Lower than conventional one.

Circle:Better than conventional one.

Double circle:Far better than conventional one.

FIG. 3

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Heating time	Ratio of step : m/n=1.5		Ratio of step : m/n=1.8		Ratio of step : m/n=2.0	
	Hardness/depth Hv/mm	Rate of crack occurrence at shoulder portion(%)	Hardness/depth Hv/mm	Rate of crack occurrence at shoulder portion(%)	Hardness/depth Hv/mm	Rate of crack occurrence at shoulder portion(%)
Short	665/2.5	0%	665/2.4	0%	665/2.4	0%
	671/2.9	0%	671/2.9	0%	671/2.8	0%
	662/3.0	0%	662/3.2	0%	662/3.0	0%
	660/3.5	0%	660/3.6	0%	660/3.1	61%
Long	660/4.2	0%	660/3.9	12%	660/3.1	88%

FIG. 4

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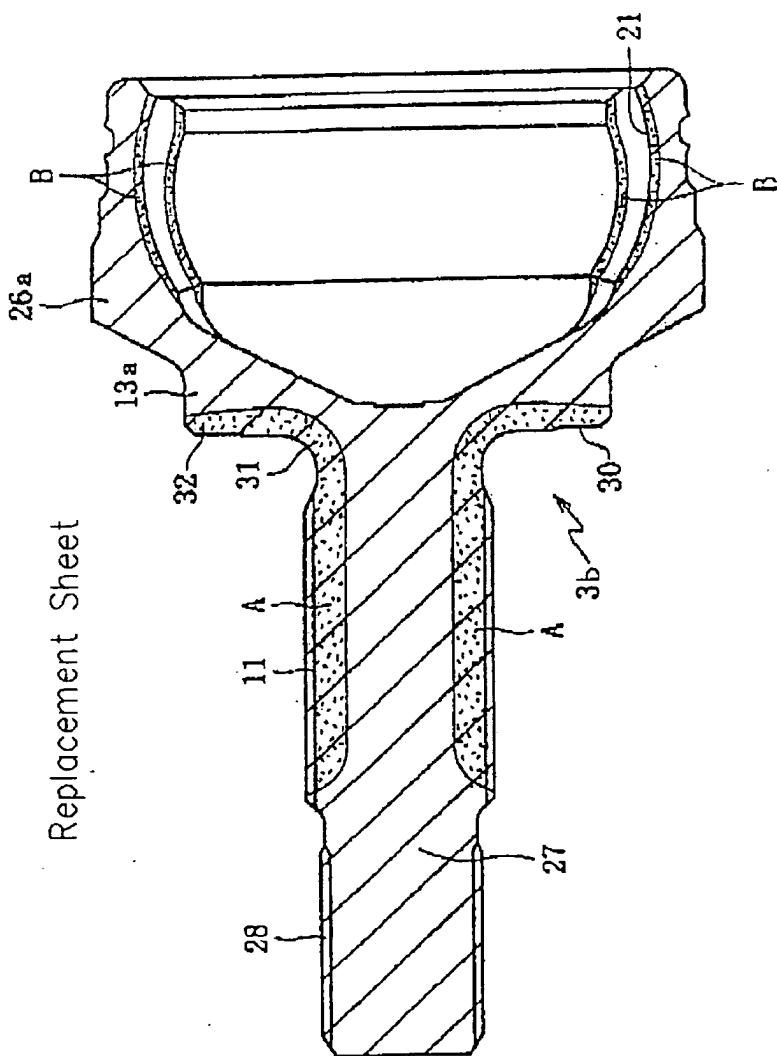


FIG. 5 (Prior Art)

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Replacement Sheet

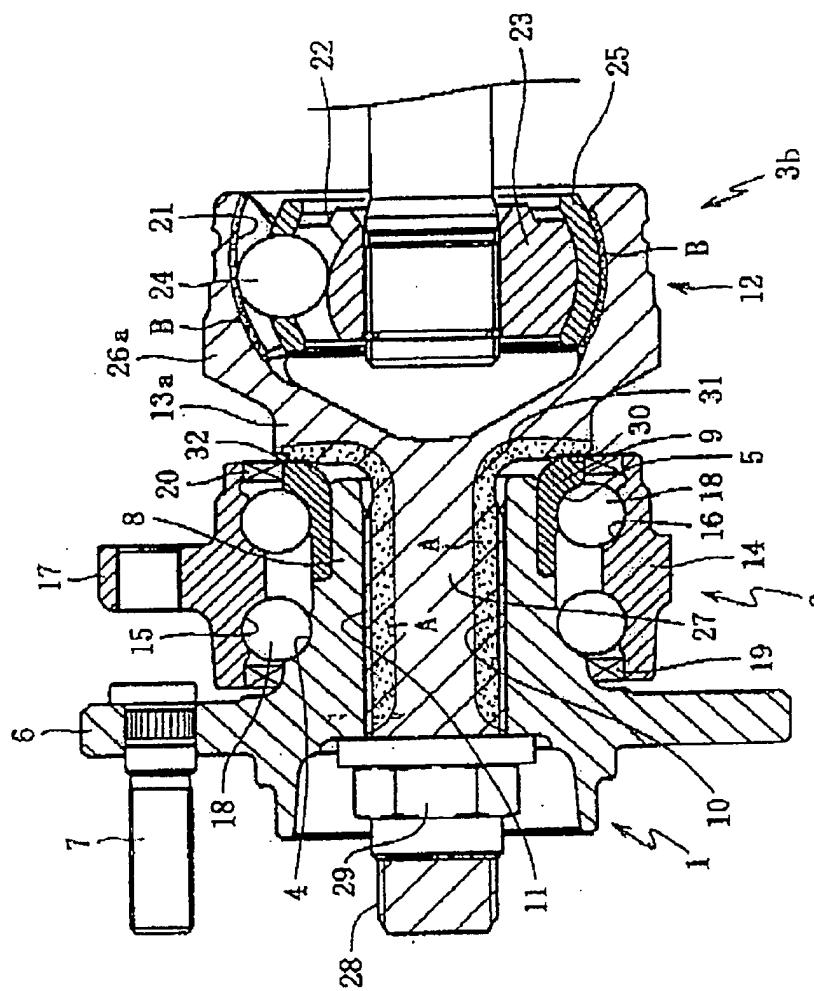


FIG. 6 (Prior Art)

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